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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,405	09/01/2004	Albrecht Kraus	DE020055US	3399

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EXAMINER	
WALFORD, NATALIE K	

ART UNIT	PAPER NUMBER
2879	

MAIL DATE	DELIVERY MODE
09/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,405	KRAUS ET AL.	
	Examiner	Art Unit	
	NATALIE K. WALFORD	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *8-10 and 17-19* is/are allowed.

6)☒ Claim(s) *1-7,11-15 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 September 2004 and 17 May 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In view of the appeal brief filed on June 12, 2008, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under'37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31. followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/NIMESHKUMAR D. PATEL/
Supervisory Patent Examiner, Art Unit 2879

Response to Amendment

The Response, filed on June 12, 2008, has been entered and acknowledged by the Examiner. Claims 1-20 are pending in the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 11-15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulrich et al. (DE 4,438,407) in view of Harding et al. (US 6,185,277).

Regarding claim 1, Ulrich discloses a light source in figure 1 comprising a discharge vessel (item 10) which is filled with a filling gas (item 26), an electron beam source arranged in vacuum or in a region of low pressure, which source generates electrons (item 24) and propels them through an inlet foil (item 20) into the discharge vessel, but does not expressly disclose that the inlet foil comprises a diamond layer, as claimed by Applicant. Harding is cited to show a foil (item 2) in figure 2 that can be made from diamond. Harding teaches that diamond has a high thermal conductivity and can be heated to high temperatures without incurring irreversible modifications (column 3, lines 26-62).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ulrich's invention to include the inlet foil comprises a diamond layer as suggested by Harding for choosing a material with a high thermal conductivity.

Regarding claim 2, the combined reference of Ulrich and Harding disclose a light source as claimed in claim 1, characterized in that the diamond layer has a thickness below 100 μm (Harding; column 3, lines 65-66).

Regarding claim 3, the combined reference of Ulrich and Harding disclose a light source as claimed in claim 1, characterized in that the diamond layer has a frame (Ulrich; item 10).

Regarding claim 4, the combined reference of Ulrich and Harding disclose a light source as claimed in claim 1, characterized in that the diamond layer has a metal brazing layer (Harding; item 22).

Regarding claim 5, the combined reference of Ulrich and Harding disclose a light source as claimed in claim 1, characterized in that the diamond layer has an organic adhesion layer (Harding; item 22).

Regarding claim 6, the combined reference of Ulrich and Harding disclose a light source as claimed in claim 1, characterized in that the electron beam source comprises a thermionic electron emitter (Ulrich; column 3, lines 17-19).

Regarding claim 7, the combined reference of Ulrich and Harding disclose a light source as claimed in claim l, characterized in that the electron beam source comprises a field emitter (Ulrich; column 3, lines 17-19).

Regarding claim 11, Ulrich discloses a gas discharge lamp in figure 1 comprising a discharge vessel (item 10) which is filled with a filling gas (item 26), which vessel is adapted to produce non-coherent visible light from at least one wall in response to received radiation produced by the gas; an inlet foil (item 20); an electron beam source arranged in vacuum or in a region of low pressure, which source generates electrons (item 24) and propels them through the inlet foil into the discharge vessel, causing the gas to produce the radiation (see FIG. 1), but does not expressly disclose that the inlet foil comprises a diamond layer, as claimed by Applicant. The Examiner notes that it has been held that the recitation than an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. Harding is cited to show a foil (item 2) in

figure 2 that can be made from diamond. Harding teaches that diamond has a high thermal conductivity and can be heated to high temperatures with incurring irreversible modifications (column 3, lines 26-62).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ulrich's invention to include the inlet foil comprises a diamond layer as suggested by Harding for choosing a material with a high thermal conductivity.

Regarding claim 12, Ulrich discloses a method of manufacturing a light source in figure 1, comprising, not necessarily in the following order: providing a discharge vessel (item 10) which is filled with a filling gas (item 26), which vessel is adapted to produce non-coherent visible light from at least one wall in response to received radiation produced by the gas an electron beam source arranged in vacuum or in a region of low pressure, which source generates electrons (item 24) and propels them into the discharge vessel, causing the gas to produce the radiation; inserting an inlet foil (item 20) between the source and the vessel, but does not expressly disclose that the inlet foil comprises a diamond layer, as claimed by Applicant. The Examiner notes that it has been held that the recitation than an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. Harding is cited to show a foil (item 2) in figure 2 that can be made from diamond. Harding teaches that diamond has a high thermal conductivity and can be heated to high temperatures with incurring irreversible modifications (column 3, lines 26-62).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ulrich's invention to include the inlet foil comprises a diamond layer as suggested by Harding for choosing a material with a high thermal conductivity.

Regarding claim 13, the combined reference of Ulrich and Harding disclose the method of claim 12, wherein the light source is a gas discharge lamp (Ulrich; column 1, lines 31-39).

Regarding claim 14, the combined reference of Ulrich and Harding disclose the light source of claim 2, wherein the diamond layer has a thickness below 50 μm (Harding; column 3, lines 65-66).

Regarding claim 15, the combined reference of Ulrich and Harding disclose the light source of claim 2, wherein the diamond layer has a thickness below 20 μm (Harding; column 3, lines 65-66).

Regarding claim 20, the combined reference of Ulrich and Harding disclose the light of claim l, wherein the electrons generate radiation in the filling gas and at least one wall of the discharge vessel comprises a phosphor (Ulrich; item 14) that produces non-coherent visible light in response to the radiation.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ulrich et al. (DE 4,438,407) in view of Harding et al. (US 6,185,277) in further view of Uemura et al. (US 6,239,547).

Regarding claim 16, the combined reference of Ulrich and Harding disclose the light source of claim 7, but do not expressly disclose that the field emitter comprises carbon nanotubes for widening the electron beam, as claimed by Applicant. Uemura is cited to show a source in

figure 4 with a field emitter that is made from carbon nanotubes (item 421). Uemura teaches that a high electric field is concentrated at the tips of the carbon nanotubes and extract electrons (column 8, lines 58-61).

Therefore, it would be obvious to one having ordinary skill in the art at the time the invention was made to modify the combined reference of Ulrich and Harding to include the field emitter comprises carbon nanotubes for widening the electron beam as suggested by Uemura for concentrating the electric field and extracting electrons.

Allowable Subject Matter

Claims 8-10 and 17-19 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 8, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 8, specifically for the limitation of carbon atoms are deposited on a substrate (7) so as to form a diamond foil (8), and a portion of the substrate is etched away such that a remaining portion (7) of the substrate forms a frame (7) for the diamond foil (8) in combination with other claimed features of the present claimed invention.

Regarding claim 17, claim 17 is allowable for the reasons given in claim 8 because of their dependency status from claim 8.

Regarding claim 9, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 9, specifically for the limitation of carbon atoms are deposited on a substrate so as to form a diamond foil (8), the diamond foil (8) is

removed from the substrate, and the diamond foil (8) is brazed to a frame (7) in combination with other claimed features of the present claimed invention.

Regarding claim 18, claim 18 is allowable for the reasons given in claim 9 because of their dependency status from claim 9.

Regarding claim 10, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 10, specifically for the limitation of carbon atoms are deposited on a substrate so as to form a diamond foil (8), the diamond foil (8) is removed from the substrate (7), and the diamond foil (8) is adhered to a frame (7) in combination with other claimed features of the present claimed invention.

Regarding claim 19, claim 19 is allowable for the reasons given in claim 10 because of their dependency status from claim 10.

Response to Arguments

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nkw
/Natalie K Walford/
Examiner, Art Unit 2879

/Sikha Roy/
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